

WHAT IS CLAIMED IS:

1. A clamping device for a machine tool, comprising:

a fixed bed;

5 a movable carriage movably mounted on the fixed bed;

a stationary fitting member fixed to the fixed bed and extending in a direction of movement of the movable carriage, the stationary fitting member having a wedge surface tilted downwardly;

10 a movable fitting member provided on the movable carriage, the movable fitting member being movable between an extended position and a retracted position in a direction transverse to the direction of movement of the movable carriage, the movable fitting member further having a wedge surface complementary to  
15 the wedge surface of the stationary fitting member; and

a driving mechanism for moving the movable fitting member between an extended position where the movable fitting member engages the stationary fitting member to clamp the movable carriage to the fixed bed and a retracted position where the  
20 movable fitting member is disengaged from the stationary fitting member to release the movable carriage.

2. The clamping device for a machine tool according to

claim 1, wherein the stationary fitting member and the movable fitting member are a stationary rack and a movable rack, respectively, each having rack teeth formed on the fitting surface for the engagement with each other.

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3. The clamping device for a machine tool according to claim 2, wherein the fixed bed has a recessed portion in which a ball screw for moving the movable carriage is disposed, and the stationary rack is fixed to a stepped portion formed on a shoulder portion of the recessed portion.

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4. The clamping device for a machine tool according to claim 1, wherein the driving mechanism is a cylinder mechanism.

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5. The clamping device for a machine tool according to claim 4, wherein the cylinder mechanism is an oil cylinder having a piston-return spring.

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6. The clamping device for a machine tool according to claim 1, wherein the movable carriage is provided with a backup member for supporting the surface opposite to the wedge surface of the movable fitting member.

7. A clamping device for a machine tool, comprising:

a movable carriage movably mounted on a fixed bed and  
clamped to a specified position on the fixed bed;

a stationary fitting member fixed to the fixed bed and  
5 extending in a direction of movement of the movable carriage, the  
stationary fitting member having a wedge surface tilted  
downwardly;

a movable fitting member provided on the movable carriage,  
the movable fitting member being movable between an extended  
10 position and a retracted position in the direction transverse to  
the direction of movement of the movable carriage, the movable  
fitting member further having a wedge surface complementary to  
the wedge surface of the stationary fitting member;

a driving mechanism for moving the movable fitting member  
15 between an extended position where the movable fitting member  
engages the stationary fitting member to clamp the movable  
carriage to the fixed bed and a retracted position where the  
movable fitting member is disengaged from the stationary fitting  
member to release the movable carriage; and

20 a backup member provided at the bottom of the movable  
carriage for supporting a surface opposite to the wedge surface  
of the movable fitting member.

8. A machine tool comprising:

a fixed bed having a recessed portion in which a ball screw for moving a movable carriage is disposed;

a stationary fitting member fixed to the fixed bed and  
5 extending in a direction of movement of the movable carriage, the stationary fitting member being fixed to the fixed bed at a shoulder of the recessed portion of the fixed bed and having a wedge surface tilted downwardly;

a movable fitting member provided on the movable carriage,  
10 the movable fitting member being movable between an extended position and a retracted position in a direction transverse to the direction of movement of the movable carriage, the movable fitting member further having a wedge surface complementary to the wedge surface of the stationary fitting member; and

15 a driving mechanism for moving the movable fitting member between an extended position where the movable fitting member engages the stationary fitting member to clamp the movable carriage to the fixed bed and a retracted position where the movable fitting member is disengaged from the stationary fitting  
20 member to release the movable carriage; and

a backup member provided at the bottom of the movable carriage for supporting a surface opposite to the wedge surface of the movable fitting member.

9. The machine tool according to claim 8, wherein the stationary fitting member and the movable fitting member are a stationary rack and a movable rack, respectively, each having  
5 rack teeth formed on the fitting surface for the engagement with each other.

10. The clamping device for a machine tool according to claim 8, wherein the driving mechanism is a cylinder mechanism.

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